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Fundamentals of a Cost system for  
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# FUNDAMENTALS OF A COST SYSTEM FOR MANUFACTURERS

JULY 1, 1916.



WASHINGTON  
GOVERNMENT PRINTING OFFICE

1916



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FEDERAL TRADE COMMISSION

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*Secretary.*

FEDERAL TRADE COMMISSION

WASHINGTON

July 1, 1916.

To the American Manufacturer:

The Federal Trade Commission has found that an amazing number of manufacturers, particularly the smaller ones, have no adequate system for determining their costs and price their goods arbitrarily. It is evident that there must be improvement in this direction before competition can be placed upon a sound economic basis.

With the object of aiding in the improvement of business generally we have endeavored in this pamphlet to show briefly the importance of accurate manufacturing costs and the fundamental principles underlying them. I commend it to your attention and feel satisfied that if you will read it carefully you will find many helpful suggestions.

The pamphlet has been prepared under my direction by Mr. Robert E. Belt, Chief Accountant, and Mr. R. W. Gardiner, Assistant.

Trusting we may have your hearty cooperation,  
I am,

Very respectfully yours,

*Edward N. Hurley*

Chairman.

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# FUNDAMENTALS OF A COST SYSTEM FOR MANUFACTURERS.

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## PURPOSE OF THIS PAMPHLET.

It is a fact too little realized that an accurate determination of costs is fundamentally related to manufacturing efficiency. More and more concerns are joining the ranks of those who realize the necessity of knowing accurately their costs of manufacturing and selling. Every business man who joins in this work can feel that he is doing his part toward the improvement of business conditions generally and his own business conditions in particular. This bulletin has been prepared with a view to aiding the campaign of education by explaining what a cost system is, how it operates, the results obtained, and the benefits to be derived from its operation.

## OBJECTIONS TO INSTALLING COST SYSTEMS.

There are a number of objections in the minds of business men who have not installed cost systems to taking the matter up. One of these is the feeling that exists in the minds of so many that their business is unique and different from any other and that no system could be devised which would give them true costs. It is unquestionably true that some lines of manufacture lend themselves more readily to the installation of a cost system than others, but it is also true that no line of manufacture is so complicated that a system can not be devised which will give reasonably accurate results.

The most common objection is that of the cost of installation and the expense of operation. Many manufacturers are of the opinion that a cost system means an interminable amount of detail and red tape and the assistance of a number of extra clerks. It is true, in many cases, that some extra labor may be required, but not to the extent that the manufacturer fears. There is in nearly every office that is not systematized sufficient unnecessary work done to cut the extra work down to a minimum, and, in fact, in some cases, where an office has been systematized, it has not been necessary to employ any extra help at all. If the manufacturer will look upon a cost system as an investment which he expects to produce for him a fair return in the same manner that an investment in improved machinery would, the objection as to the expense is not a valid one. A number of business men think that money spent for stationery is wasted and that a cheap ready-made book will answer as well as one specially designed for his business. If a \$10 book which lasts

a year will save half an hour a day for a \$12-a-week clerk as compared with the use of a ready-made book which can be bought for \$1, the additional investment of \$9 has brought in a revenue or effected a saving of \$39 for the year. This holds true of nearly all specially designed forms as well.

Other business men are of the opinion that they do not need a cost system because they know what their goods cost. They may, and a number of them do have an approximate idea of what their goods cost, but in a large number of instances this supposed knowledge is based on foremen's guesses in advance as to the time necessary to do the work or as to the time spent on the work after it is done. Guesswork is unsafe and poor business practice.

#### NECESSITY FOR ASCERTAINING TRUE COSTS.

Formerly the necessity for the determination of true manufacturing costs was not as imperative as it is to-day. Margins between cost and selling price in most lines were larger. Costs could be ignored except in a general way and a good return still be made on the investment; but to-day margins of profit in most lines of trade are very much narrower than formerly, and the necessity for the most efficient management and closest analysis is felt as never before.

It is necessary to-day for the business man's success that he know on what articles he is making a profit and on what he is incurring a loss. Competitive conditions are seriously disturbed where losses on one or more articles are recovered by profits on other articles. It is obvious that a manufacturer should not only know the cost of each article he manufactures but that he should see that every article manufactured bears its proper share of factory and general overhead.

Most manufacturing plants have grown to a size which renders personal supervision impossible. The only reliable way, therefore, by which an executive can judge of the efficiency of an organization is through a system of periodical statistical reports. These reports can only be accurately obtained when a good cost system is in operation.

New methods are being introduced and improved machinery installed in the factory every day, with a view of reducing costs either by the elimination of waste or by increasing efficiency. It is impossible to know whether the introduction of these improvements will reduce costs unless the manufacturer knows not only what his total cost is but exactly what items make up the total. Items of cost are frequently lost track of when the total only is considered, while if these items were properly segregated so as to show what they were they could be materially reduced and in some instances eliminated altogether.

**EXCHANGE OF STATISTICAL INFORMATION BENEFICIAL.**

In the past many manufacturers disliked to give out information concerning their business. To-day the reverse is the case. Trade associations are compiling statistics as to production, shipments, and costs for the benefit of their members, and the manufacturer instead of trying to keep this information to himself welcomes the opportunity to supply the data, knowing that his competitors are doing the same thing and that these statistics will be of benefit to himself and to his industry. The Federal Trade Commission is keenly alive to the value of this information.

The Commission is urging manufacturers to determine their costs accurately in the interest of better trade conditions. It believes that anything that is of benefit to an industry is of benefit to the public, and it is also of the opinion that the nearer cost systems approach uniformity the more valuable will be the results.

**MANY BUSINESSES NOT PROFITABLE.**

A large proportion of manufacturers are not making the money they should. A great number of them are actually losing money.

The purpose of conducting a business is to make money, and the only way to make money is to sell something for more than it costs. The first essential, then, is to know the cost. It is the belief of the Commission that the small margin of profit existing in so many of our industries is due to the ignorance on the part of manufacturers of what their goods actually cost to produce. This ignorance causes them to make unprofitable prices, which the manufacturer who does know his cost is forced to meet to a large extent.

**WHAT IS COST?**

Cost is defined as the amount or equivalent paid, or charged, or given for anything; loss of any kind, expenditure, outlay, as of money, time, labor.

This equivalent may be in the form of money paid for material or for labor, or for some one of the many kinds of expense or loss that exist in every manufacturing business. It is apparent that cost consists of three elements, viz, material, labor, and expense.

**SYSTEM AND ITS DEVELOPMENT.**

The problem is to ascertain the amount of each of these elements, and in order to accomplish this in the simplest and most practical manner the manufacturer has recourse to system. System is defined as a regular method or order, a formal arrangement, or a mode of operation governed by general laws or rules.

During the last 10 years the best accounting brains in the country have been devoting a great deal of time to the perfection of general laws or rules which will give the desired results with the least effort and expense, and the outcome of their work is what is known as a "Cost System." This provides not only for the determination of the amount of each element of cost properly chargeable to each job or operation, but also provides for an improved method of bookkeeping which causes the books to reflect at all times the true financial and industrial condition of the business and renders possible the preparation of monthly statements of conditions, as well as complete monthly statements of financial and factory operations.

There are, generally speaking, but two distinct methods of manufacture. Each requires a cost system a little different in detail but identical in fundamental principles. The first of these is used in a business where every order is a separate article of manufacture, very often made to order, and the selling price fixed before work is started; and the second is used in a business where the output consists of one or more articles which are being continually produced. For convenience we will designate the cost systems applicable to each as the "Job Cost System" and the "Continuous Production System."

#### THE JOB COST SYSTEM.

The first step is to provide for giving the factory instructions as to what work is to be done, and a form should be provided which must give the following information: Job number, date, name and address of customer for whom work is to be done, a description of the work to be done, giving sufficient details, specifications as to what material will be needed, and shipping instructions. This form should also have space for the entry of shipments, so that when the work is done the order form will be a complete record. A duplicate of this factory order should be kept in the office and when the original is sent to the factory the cost clerk opens a job cost sheet under that number.

The job cost sheet should show number, date opened, customer's name, and in some cases a brief description of the work is advisable, as it sometimes enables the cost clerk to detect an error in the number shown on the time ticket or material requisition. As all reports are made by job number instead of by name, it is of vital importance that the greatest care be taken to insure the correctness of the numbers on the time tickets and material requisitions. In addition to the above information, the cost sheet should be arranged so as to provide columns for the following: Date, employee's number, hours, amount of pay, machine number, machine hours, requisition number, quantity of material and cost thereof.

**MATERIAL.**

The first element of cost is material. Material is of two kinds, direct and indirect.

Direct material is that which forms part of some particular job and can be so charged. Indirect material is that which can not be located as belonging to a particular job, and which is more in the nature of general supplies. This class of material is sometimes termed "expense material," as its ultimate destination is the expense account of some department.

Material must be purchased, received, checked, and taken care of until it is required for use, and the general method recommended is as follows:

A part of the factory should be set aside as a stock room and some employee designated to perform the duties of stock clerk. The stock clerk will keep the stock ledger cards or sheets, one for each article, showing the quantity on hand. These cards should also show the maximum quantity of each article he is to be allowed to carry and also the minimum below which the stock must not be allowed to fall. When the stock reaches the minimum a requisition should be made on the purchasing agent for sufficient quantity to bring the stock up to the maximum and sent to the superintendent or works manager for approval, after which the goods are ordered. When the goods come in they should go to the receiving clerk, who checks them, reports their receipt to the office, and delivers the goods to the stock room, where they remain until requisitioned out.

When the order reaches the factory the first step is to obtain the material, and a requisition should be made on the storeroom for the necessary quantity. This requisition should be numbered and space should be provided thereon for job number or department, date, quantity, description, price, amount, and signature of foreman. The cost clerk extends the amount on the requisition and posts it to the job cost sheet in the space provided, then files it away until the end of the month, when the total for the month must be obtained.

**LABOR.**

The second element of cost is labor, and this, like material, is divided into two classes—direct, or, as it is sometimes called, productive labor, and indirect, or nonproductive labor. Direct labor is that which is applied directly to the job and which can be so charged. Indirect labor is that which can not be located as belonging to any particular job, but must be charged to the expenses of some department.

The general method of handling labor is to have each employee make up a time ticket each day. This ticket, for recording direct labor, should show the employee's name, employee's number, date

and hours worked on each job, job number, and machine number, if a machine is used; and in the case of indirect labor the department and nature of the work must be shown in lieu of job number. These time tickets are sent in to the office each day and the direct labor is posted to the job cost sheets and the indirect labor entered on a summary sheet with columns headed by the name of departments, so that the totals can be posted to the department expense account at the end of the month.

The productive hours for each department are entered on another summary, both for man hours and machine hours, which is totaled at the end of the month. If the work is correctly done the totals on this summary will equal the total of the postings made to the job cost sheets.

#### OVERHEAD EXPENSE.

The job cost sheet now has entered thereon the first two elements of cost, viz, direct material and direct labor, and the next question is the proper method of handling the third element of cost, which is generally known as "Overhead Expense," or, as it is also called, "Burden." Overhead expense is the expense of every kind connected with the business, none of which can be directly located as belonging to a particular job. These expenses, while part of the cost of a job, are general, so can not reach the job direct; hence a method must be devised for them to reach the cost sheet in an indirect manner, the method at the same time being so planned that each job will receive its fair proportion of the total.

Before taking up the question of how overhead expense is to be handled, it is necessary to determine just what items constitute overhead. A list of these items and their description must necessarily be very general and subject to change, as items of expense occur in some lines of manufacture which it is necessary to treat as overhead, while the same items in another line can be handled as direct expense.

Overhead may properly be divided into two classes—factory overhead, which consists of items directly belonging to factory operations, and general overhead, which is expense not directly connected with the factory.

As factory overhead is one of the items of total factory cost, the method of handling this will be outlined first.

#### DEPARTMENTALIZATION NECESSARY FOR PROPER DISTRIBUTION OF FACTORY OVERHEAD.

The first step in a fair and equitable distribution of factory overhead is a departmentalization of the business. Every business can be departmentalized to some extent, some more than others, but the subdivision into departments varies so much in the different lines that it is almost impossible to give any definite idea as to what divisions

should be made. Generally speaking, it is best to subdivide into departments according to operations of manufacture, although at times, for simplicity, a subdivision which places similar work in the same department regardless of operation is used and has proven satisfactory in a number of cases. By similar work is meant hand workers who use practically the same amount of supplies, machines of similar type, etc. Departmentalizing by operations is a little more complicated, as it results in a greater number of departments, because the same or a similar kind of hand work may be done in several departments, and the same holds true of the machine departments.

In a number of lines of manufacture all work can be placed in one department where the unit of production is the same; i. e., with hand workers the unit is the productive man hour, with machine workers the machine hour, and in other departments the unit may be pound, ton, piece, dozen, square feet, yard, etc. In departmentalizing a business the fact should be borne in mind that the better the departmental subdivision is made the more accurate will be the cost results.

#### FIXED FACTORY CHARGES.

Building Expense, Power, Insurance, Taxes, and Depreciation constitute what are generally known as "Fixed Factory Charges," because they are practically fixed, and the factory has nothing to do with either increasing or decreasing them.

#### BUILDING EXPENSE.

The first requisite of a business is a place in which to work; consequently the first item of overhead is Building Expense or Rent. If the building is owned by the manufacturer, the building expenses consist of Insurance, Taxes, Depreciation, and Repairs, together with such other expenses which are general in their nature but yet are necessary to render the building useful, such as heat, light, elevator, janitor, and water. If the building is rented, the items of insurance, taxes, depreciation, and repairs are paid by the owner and in lieu of these is Rent. Rent includes a return on the investment in addition to the items named, so when it is desired to make comparisons between plants where the building is owned and where it is rented the return on the investment must be taken into consideration.

The basis of distribution for all rent charges is the productive or used square feet. The total used square feet divided into the total rent charges gives the charge per used square foot. This result multiplied by the used area of the department gives that department's proportion of the total rent expenses. By used floor space is meant that which is actually in use, exclusive of stairways, passages, elevator space, and idle or unused space.

**POWER.**

The second requisite is power, and this must be obtained either from outside sources or generated in one's own plant. The distribution of power is a little more difficult than that of building expense, and sometimes an arbitrary division based on the opinion of the engineer and superintendent is used, but this method is not recommended. One difficulty in distributing power charges is that very often the same boiler supplies steam for heating and steam for power generating and it is difficult to say how much for each.

For distributing power charges the factor generally used is found by multiplying the horsepower required by each machine or department by the average hours run by each and dividing the sum into the total power charge. Power distribution is a problem in itself, and it varies so much in different plants that it is impossible to lay down any rules for its solution. Each plant must be treated in an individual manner according to the existing conditions.

**INSURANCE AND TAXES.**

Insurance and taxes should be distributed on the basis of the actual net value of the equipment in each department. This refers to fire insurance and taxes on the plant only, as boiler insurance is a charge to power, accident insurance is a charge to general factory expense, and the charge for other forms of insurance is determined by the nature of the insurance. Taxes on real estate and plant only are chargeable against manufacturing operations, as taxes on finished goods in stock and franchise taxes are chargeable to general expense, while income tax is a direct charge to profit and loss.

**DEPRECIATION—THE NECESSITY OF INCLUDING IN COST.**

Depreciation is one of the most important of all the overhead expenses, because it is generally the largest. There has probably been more written on this subject than any other item of overhead, but there are so many different ways of handling depreciation, some of which are best adapted for one line and some for another, that there is really no recognized standard method. It is universally admitted, however, that depreciation does exist, that it is an element of cost just as much as labor or material, and that any system which does not provide for including it is faulty and one that will not give true costs.

**METHODS OF DETERMINING DEPRECIATION.**

One method of handling depreciation, which is unqualifiedly condemned although extensively used, is to wait until the end of the year and then if the profit and loss statement shows that a good profit has been earned to charge a part of this profit to depreciation. If, on the other hand, the profit and loss statement shows little or no profit, nothing is charged to depreciation. It is difficult to

understand how any practical man can take the view that his plant and equipment have not worn out because he has not made a profit, and at the same time have worn out when he has made a profit.

The first step necessary to provide for proper depreciation is to departmentalize the plant values. The next step is to take each kind of equipment or machine and figure its proper depreciation.

There are several methods of determining the amount of depreciation. One is to estimate the scrap value and deduct this figure from the original cost. The difference is then divided by the estimated life of the machine in years, and the result is the annual depreciation on that machine. A modification of this method which is not quite as simple, but really affords no difficulty, is after ascertaining the amount to be charged off during the life of the machine to determine a percentage which when applied to the net book value of the machine will leave only the scrap value of the machine on the books at the expiration of its estimated life.

To illustrate: If the initial cost of a machine and equipment is \$1,000 and the estimated scrap value is \$200, with an estimated life of 10 years, then \$800 is the amount that must be charged into cost during that period, or \$80 per year. To attain this result, by using the net value of the machine as a basis, a rate of 15 per cent would be necessary, which would make the depreciation 15 per cent on \$1,000, or \$150, the first year; 15 per cent on \$850, or \$127.50, the second year, etc. The advantage of this method in the interest of normal costs is that the decrease in depreciation charges is ordinarily offset by an increase in repairs.

#### VARIABLE FACTORY CHARGES.

Variable charges or controllable expenses are the final items of factory overhead. These are subdivided departmentally and charged to the expense account of each department. Owing to the fact that no two lines of manufacture have the same kinds of expenses, a description of them must be very general. Such items as nonproductive labor, repairs, lubricating oils, and miscellaneous supplies are found in nearly all expense accounts.

Factory expenses are incurred which can not be located as belonging to any department, and these items should be charged to an account called "General Factory Expense." This account should be distributed over the departmental expense accounts on some basis which is fair to all, the nature of this distribution varying as to special conditions existing in each particular business. Great care should be taken to prevent anything being charged to the general account that could possibly be charged to one of the departmental accounts, as otherwise, either through carelessness or lack of knowledge, the general account will become the dumping ground for all items the charge for which is in the least doubt.

**INTEREST.**

The question of whether interest on the capital invested is a proper charge against cost of production is one on which there is a marked difference of opinion. The cases where it is considered desirable to include interest in cost may be grouped under two heads:

1. Where materials have to be stored for long periods while a seasoning process is being completed.
2. Where it is desired to show the effect of variations in the amount of capital employed and the term of employment.

As seasoned material has a higher value than when first purchased, it is apparent that the interest on the capital locked up during the seasoning forms in a sense a direct part of the cost of the material. If the material were purchased in a seasoned condition, a higher price would have to be paid, and this price would at least include interest and other carrying charges.

As some manufacturing processes require the use of expensive equipment or take a long time to complete, both of which tie up capital, while other processes require neither the equipment nor the time, it is impossible to get true relative costs unless consideration is given to interest on the capital employed.

Cost accountants and industrial engineers, for comparative and statistical purposes, almost unanimously advocate including interest in cost, and so far as interest is included in cost for comparative or statistical purposes it serves a useful purpose.

Auditors, on the other hand, who are more directly interested in the preparation of statements showing the financial condition of a business, take the ground that interest is not an item of cost and that to include it in cost results in an inflation of inventory values and an anticipation of profits. It is true that including interest in cost does inflate the inventory and is an anticipation of profit by exactly the amount of interest charged to the cost of the goods on hand. In arriving at inventory values, however, the approximate interest which has been charged to the cost of the goods on hand can be readily eliminated.

It is recommended that where interest on the investment is treated as an item of cost that the interest charged to the goods on hand be eliminated from inventory values, and, that in preparing profit and loss statements the amount of the interest charged to costs during the period be returned to Income under the specific caption "Interest on Investment."

**ASCERTAINMENT OF NORMAL COST.**

In every manufacturing business it is unquestionably true that in some months items of expense will occur which are not properly chargeable against the cost for that month. For instance, it may be

found necessary to make extensive repairs on a machine, which repairs are sufficient for the entire year, and it would be manifestly unfair to include the entire repairs in the costs of any given month. Furthermore, every business has its dull season when its departments are not running more than half time, and this would also result in the actual cost for those months being abnormally high.

These facts lead to the conclusion that what is necessary for the manufacturer to know is not "What did it cost me to produce my goods last month?" but "What would it have cost me to produce under normal conditions and how far were my actual costs from normal?" It will be seen that if selling prices are based on actual costs during a busy season when the plant is probably working overtime, the selling prices would be so low that the plant might be literally swamped with work, while conversely, if the selling prices were based on actual costs when the plant was dull, they might be so high that no business whatever could be obtained. It is necessary, therefore, that costs be averaged over a period of time sufficiently long to take in both dull and busy seasons. The method of doing this is to establish a "Reserve for Overhead" and credit this account with the reduction in cost during the busy season and charge it with the increase in cost during the dull season. The balance of this account is closed out to Trading Account, as will be explained later.

#### DISTRIBUTION OF OVERHEAD TO JOB COSTS.

Having now provided for the recording of the overhead expense, it becomes necessary to provide for charging it to the different jobs. There are several methods of doing this. The first is by charging a percentage on direct labor, but this in many lines results in inaccuracies and the method has been discarded by a large number of manufacturers, although there are many who still use it owing to its ease of operation. An illustration will show the reason for the inaccuracy of this method. One man receiving 40 cents an hour may be doing handwork, requiring no power, very little floor space, and few supplies. If the overhead rate was 40 per cent, his hour cost would be 40 plus 16, or 56 cents. Another man, receiving the same rate of pay, may be working at a large and expensive machine, being subject to repairs, using power, several times the floor space, and using a quantity of supplies, and his cost would be figured at 56 cents also, although it is probably a fact that the machine he is using can not be operated for less than \$1 an hour. Another fault with this method is that it throws most of the burden on the high-priced man, when as a matter of fact, and this will be admitted by nearly every practical executive, the high-priced man requires less supervision and wastes less material than the cheaper one and really should carry a less burden instead of a greater.

There are, however, some lines of manufacture where the direct labor method of distributing overhead can be used to advantage, particularly where the workmen are on a piecework basis or where they receive practically the same wage. In such cases a percentage of direct labor will give good results.

#### THE PRODUCTIVE-HOUR METHOD.

Another method, and the one that is recognized by a majority of manufacturers and accountants as the standard, is what is known as the "Productive-Hour Method." In a plant where practically all the labor is hand labor, the man hour is the basis and the total hours divided into the total overhead expense gives a rate per hour, which rate multiplied by the hours spent on a job gives the overhead expense chargeable to that job.

In a plant where machines are the producing unit the distribution must be on the basis of the machine hour, and the same method is pursued as in the case of the man hour.

An estimate of overhead expenses should be made at the beginning of the year, based on previous years' experience with such changes as the executive's knowledge of business conditions leads him to make. This figure, divided by the expected output in hours of the machines, gives a normal overhead expense rate to be applied to all work in that department. This rate remains constant until the end of the fiscal year. The following schedule shows the method to be used in establishing this rate:

ESTIMATED FACTORY OVERHEAD, 1916.

	Total.	Dept. A.	Dept. B.	Dept. C.
Indirect Labor.....	\$7,300 00	\$2,500 00	\$3,000 00	\$1,800 00
Building Expense.....	3,900 00	1,200 00	1,500 00	1,200 00
Power.....	8,560 00	2,800 00	3,960 00	1,800 00
Insurance.....	420 00	144 00	192 00	84 00
Taxes.....	525 00	180 00	240 00	105 00
Depreciation.....	2,625 00	900 00	1,200 00	525 00
Repairs.....	5,400 00	1,500 00	2,700 00	1,200 00
General Factory Expense.....	4,950 00	1,650 00	2,100 00	1,200 00
Miscellaneous Supplies.....	790 00	240 00	360 00	190 00
Miscellaneous Expense.....	1,818 00	720 00	900 00	198 00
	36,288 00	11,834 00	16,152 00	8,302 00
Yearly Hours Per Unit: 365 Days 8 Hours Each.....		2,448	2,448	2,448
Less 10 per cent.....	245	245	245	245
Net Yearly Hours Per Unit.....	2,203	2,203	2,203	2,203
Number of Units in Department.....	8	14	14	25
Yearly Hours per Department.....	17,624	30,842	30,842	55,075
Hourly Overhead Rate.....	67¢	52¢	52¢	15¢

#### TOTAL FACTORY COST.

The job cost sheet has now been charged with the three elements of cost, viz., material, labor, and factory overhead expense, and the total of these constitutes factory cost, to which must be added the general overhead.

**SHIPPING, SELLING, AND GENERAL EXPENSES.**

All of the items of factory cost now having been described and the goods completed and placed in the storeroom as finished goods, the next step is the method of handling the shipping, selling, and general expenses of the business.

Shipping account is charged each month with its proportion of the fixed charges and with labor, supplies, and miscellaneous expense items. The total of this account is closed out to Profit and Loss.

Selling expense is the next item to be considered. Some include everything under this head that is not charged to the factory. A better plan, though, is to separate the actual selling expense from the general expenses and include in selling only such items as salaries and expenses of the sales force whether on the road or in the office, advertising, catalogues, price lists, the cost of handling canceled orders, etc.

Under general expenses are included officers' salaries, office expenses (not including factory clerks), discount on sales, bad debts, bad work, franchise taxes, and other items of a general nature. The item Bad Work included in General Expense is defective work. As every manufacturer has to contend with this item of expense it must be included with the other general expenses.

An estimate of shipping, selling, and general expenses should be made at the beginning of the year. This amount divided by the estimated cost of the total completed work for the year gives a percentage for these items. Applying this rate to the factory cost of a job, the amount which must be added to factory cost to ascertain total cost is readily determined.

The following schedule shows the method of arriving at this rate:

**ESTIMATED SHIPPING, SELLING, AND GENERAL EXPENSES.**

FOR YEAR 1916.

	Total.	Distribution.		
		Shipping.	Selling.	General.
Building Expense.....	\$1,200 00	\$600 00	-----	\$600 00
Labor.....	1,500 00	1,500 00	-----	-----
Salaries.....	13,200 00	-----	\$9,600 00	3,600 00
Officers' Salaries.....	4,800 00	-----	-----	4,800 00
Commissions.....	2,500 00	-----	2,500 00	-----
Advertising.....	1,500 00	-----	1,500 00	-----
Insurance.....	192 00	12 00	-----	180 00
Taxes.....	215 00	15 00	-----	200 00
Depreciation.....	200 00	100 00	-----	100 00
Repairs.....	120 00	50 00	-----	70 00
Delivery Expense.....	2,300 00	-----	-----	2,300 00
Discount on Sales.....	1,200 00	-----	-----	1,200 00
Reserve for Bad Debts.....	750 00	-----	-----	750 00
Miscellaneous Expense.....	325 00	75 00	100 00	150 00
	30,002 00	2,352 00	13,700 00	13,950 00
Estimated cost of completed work, \$120,000.00.				
Percentage on Cost.....	25%	2%	11.5%	11.5%

**CONTROLLING ACCOUNTS.**

The principles of double entry are carried out in connection with a cost system by means of what is known as "controlling accounts." The advantage of the controlling principle is that it puts the book-keeper in position to check up the work of the cost department in totals, or, in other words, to control it. The control system will not detect an error such as posting to the wrong account, but it is an indubitable proof that the cost clerk has posted every item to the proper side of some account. It is hard to exaggerate the importance of this feature in any cost system.

Materials account is charged with all purchases of materials from the accounts payable or voucher register. The requisitions for the month are totaled and a journal entry effected crediting Materials and charging Work in Process. The balance of the account is the cost of the materials in the stock room.

Labor account is charged with the total labor, both direct and indirect. At the end of the month the account is credited with the total labor shown on the cost clerk's labor summaries and Work in Process charged with the direct labor and the departmental expense accounts with the indirect labor. There will be a credit balance in this account which will represent the amount earned by the employees, but not paid. When the end of a pay period falls on the last day of the month, the account should balance.

The next type of controlling accounts necessary are those which reflect the overhead expenses. Building Expense account is charged with all expenses of every kind, as heretofore described, and at the end of the month a journal entry is made charging each department with its proportion of the total and crediting Building Expense account. The entire expense of this account should be absorbed by the departmental expense accounts.

Power account is handled in exactly the same manner. The entire expense of this account should also be absorbed by the departmental expense accounts.

Insurance is charged with all insurance which applies to the factory, such as fire, accident, boiler, etc. This account is credited each month with one-twelfth of the annual payment and the proper departmental account charged. Insurance on stock, either raw material, work in process, or finished goods, is charged to General Expense and Insurance account credited. The balance of this account is the value of prepaid insurance.

Taxes account is handled in the same manner as the Insurance account, but these two accounts should be kept separate.

Depreciation account is comparatively simple to handle. A journal entry is made each month charging Building Expense, Power, and the departmental expense accounts with the amount of depreciation

decided on at the beginning of the year. The credit goes to an account called "Depreciation Reserve," the effect of which is to reduce the book value of the plant and equipment, although it is not a good plan to actually reduce this value on the books. It is better to carry the reserve account and let the plant accounts remain at the original cost figure.

The departmental expense accounts have now been charged with their proportion of the fixed charges and with the indirect labor. The only other charges are miscellaneous expenses, supplies, and repairs, and these come from the Accounts Payable Register. These departmental expense accounts are now credited with the distributed overhead expense determined by multiplying the number of operating hours by the normal hourly rate, Work in Process account being charged. This total credit should balance the expense accounts, but practically there will be small balances which should be charged or credited at the end of the year to Reserve for Overhead.

Work in Process account now stands charged with direct material, direct labor, and the departmental overhead expense. It is credited with the cost of all jobs completed during the month, the charge being to Finished Goods account. The balance of Work in Process account is the factory cost of incomplete work. The charge to offset this credit is to Finished Goods account.

When goods are sold, Finished Goods account is credited with the cost and Trading Account charged. This figure is what is known as "Cost of Sales." When goods are returned, Trading account is credited and Finished Goods charged with the cost of the returned goods, so that Cost of Sales will only be the cost of goods actually sold.

The Reserve for Overhead is charged or credited to Trading account, so that the balance of the account is the true gross profit on the goods sold.

#### THE CONTINUOUS PRODUCTION SYSTEM.

A system for recording the costs of a continuous product is a much simpler one than a system for recording the cost of job work, because in the former costs are figured departmentally or by processes instead of by jobs. The accounts are practically the same, except that there is not the necessity for the same detailed analysis as in the job cost system.

The business must be departmentalized as the first step, and the departmental divisions carefully observed, as otherwise true costs will not be obtained. The departmental divisions are different from the job cost divisions, as these should be by processes, regardless as to whether the work is of similar character or not.

Material is handled in the same way in both systems as far as purchases and delivery to stock room goes, but in a slightly different

manner after it is requisitioned out. It will be necessary to open a material account for each department. As the material is withdrawn for use these accounts are charged with its cost whether it be purchased raw material or the finished product of some preceding department. The credit to these accounts will be the cost of the material used on the completed work and the balance will be the cost of the material used on the work in process.

Labor is handled in the same manner as described in the Job Cost System, except that it is not necessary to differentiate between direct and indirect labor. It is, however, advisable to keep the direct and indirect labor separate in order to get a detailed analysis of cost in each department, so that any leaks which may exist will be brought to light. All labor done in a department is part of the cost of operation of that department and must be taken up in the monthly cost sheets. There will be some general labor, such as foremen, superintendents, etc., whose work must be distributed over several departments. The basis for this distribution depends on the nature of the business. It will be necessary to open departmental labor accounts which will be charged with all labor and credited with the labor cost of the completed material. The balance in these accounts will represent the value of labor done on the work in process.

There should be also an overhead expense account for each department, and these accounts will be charged with their proportion of the fixed charges, with all indirect material or supplies, and with all miscellaneous expense items. The credit to these accounts will be the expense incurred on the work completed, and the balance will be the expenses incurred on the work in process.

At the end of the month a journal entry is made charging a succeeding department material account, or the finished goods account, as the case may be, with the total cost of the product sent out and crediting each of the departmental accounts with its share of the total cost. When this is done it will be seen that the sum of the balances in these three departmental accounts, namely, material, labor, and expense, will be the cost of the work in process in that department. When a department has completed all the work it has and sent its product to some other department these three accounts should balance.

In some lines of manufacture, where a continuous product is made, it is the practice to issue a Works Production Order to make a certain quantity of goods, and where this practice is used the Job Cost System is used, keeping the cost by order number.

After the goods have reached the Finished Goods account the method of treatment under the Continuous Production System is identical with the Job Cost System.

**FINANCIAL AND OPERATING STATEMENTS.**

The profit and loss statement should be so arranged as to reflect the actual results of the period, and the figures shown thereon should not need any explanation or qualification.

For the purpose of giving the executive information as to the operations of his factory it is well to prepare a statement of factory operations. As all the figures are from the books, the preparation of this statement involves very little work and gives valuable information.

A statement of assets and liabilities should also be prepared, and the difference between assets and liabilities must be the figure shown on the profit and loss statement as surplus or net profit.

Where goods are purchased for resale the profit and loss statement should have another division showing the amount of profit on purchased goods or merchandising separate from the profit earned on manufactured goods. Where this item is small it may be disregarded and merged into manufactured goods, but the best practice is to keep them separate.

The systems outlined are believed to be simple and easy of operation. While a number of details have been explained it must be remembered that the methods outlined are general, and it is not claimed that the outlines as given would fit every business. The one thing above all others that both the manufacturer and the accountant should have in mind in installing a system is simplicity. Simplicity means ease of operation, less liability of error, and what is equally important economy of operation.

**LEDGER ACCOUNTS AND STATEMENTS.**

The following schedules show the ledger accounts necessary, the trial balance before the closing entries are made, and forms for a profit and loss statement, statement of factory operations, and balance sheet. In order to enable ready reference to be made to the various entries numbers have been inserted showing the source of the entry. While the ledger accounts show the books as closed, it is not recommended that this be done except at the end of the fiscal year, as statements can be prepared from the ledger without the accounts being closed.

**MATERIALS.**

1.

Balance.....	\$3,000	00	Work in Process.....	(14)	\$6,484	32
Purchases.....	7,800	00	Balance.....		4,600	00
Freight and Express.....	(29)	284				
		32				
	11,084	32				
Balance.....					11,084	32
	4,600	00				

## LABOR.

2.

Total Pay Roll.....(29)	\$5,692	28	Balance.....	\$200	00
Balance.....	686	79	Work in Process.....(14)	4,444	67
			Building Expense.....(3)	185	00
			Power.....(4)	300	00
			Repairs.....(8)	356	40
			General Factory Expense.....(9)	92	60
			Factory Overhead, Dept. A...(10)	246	50
			"      "      B...(11)	251	20
			"      "      C...(12)	185	70
			Shipping.....(21)	117	00
	6,379	07		6,379	07
			Balance.....	686	79

## BUILDING EXPENSE.

3.

Labor.....(2)	\$185	00	General Factory Expense.....(9)	\$76	29
Power (Heat and Light).....(4)	84	10	Factory Overhead, Dept. A...(10)	101	72
Insurance.....(5)	12	00	"      "      B...(11)	127	15
Taxes.....(6)	20	00	"      "      C...(12)	101	72
Depreciation.....(7)	40	00	Shipping.....(21)	50	86
Repairs.....(8)	65	00	General Expense (Office).....(23)	50	86
Elevator Expenses.....(29)	58	00			
Water.....(29)	16	50			
Miscellaneous Materials.....(29)	28	00			
	508	60		508	60

## POWER.

4.

Labor.....(2)	\$300	00	Building Expense.....(3)	\$84	10
Insurance.....(5)	8	00	Factory Overhead, Dept. A...(10)	252	30
Taxes.....(6)	10	00	"      "      B...(11)	336	40
Depreciation.....(7)	40	00	"      "      C...(12)	168	20
Fuel.....(29)	325	00			
Oils.....(29)	45	00			
Water.....(29)	38	00			
Repairs and Supplies.....(29)	75	00			
	841	00		841	00

## INSURANCE.

5.

Accounts Payable.....(29)	\$828	00	Building Expense.....(3)	\$12	00
			Power.....(4)	8	00
			Repairs.....(8)	2	00
			Factory Overhead, Dept. A...(10)	12	00
			"      "      B...(11)	16	00
			"      "      C...(12)	7	00
			Shipping.....(21)	1	00
			General Expense.....(23)	14	00
			Balance.....	756	00
	828	00		828	00
Balance.....	756	00			

## TAXES.

6.

Accounts Payable.....(29)	\$1,095	00	Building Expense.....(3)	\$20	00
			Power.....(4)	10	00
			Repairs.....(8)	2	50
			Factory Overhead, Dept. A...(10)	15	00
			"      "      B...(11)	20	00
			"      "      C...(12)	8	75
			Shipping.....(21)	1	25
			General Expense.....(23)	16	75
			Balance.....	1,000	75
	1,095	00		1,095	00
Balance.....	1,000	75			

## COST SYSTEM FOR MANUFACTURERS.

23

## DEPRECIATION RESERVE.

7.

Balance.....		\$1,568	74	Balance.....		\$1,240	00
				Building Expense.....(3)		40	00
				Power.....(4)		40	00
				Repairs.....(8)		13	33
				Factory Overhead Dept. A.....(10)		75	00
				"      "      B.....(11)		100	00
				"      "      C.....(12)		43	75
				Shipping.....(21)		8	33
				General Expense.....(23)		8	33
				Balaue.....		1,568	74
						1,568	74

## REPAIRS.

8.

Labor.....(2)	\$356	40	Building Expense.....(3)		\$65	00
Insurance.....(5)	2	00	Factory Overhead, Dept. A.....(10)		159	00
Taxes.....(6)	2	50	"      "      B.....(11)		247	80
Depreciation.....(7)	13	33	"      "      C.....(12)		115	43
Supplies.....(29)	167	00	Shipping.....(21)		2	00
Miscellaneous Expense.....(29)	48	00			589	23
	589	23			589	23

## GENERAL FACTORY EXPENSE.

9.

Labor.....(2)	\$92	60	Factory Overhead, Dept. A.....(10)		\$155	90
Building Expense.....(3)	76	29	"      "      B.....(11)		207	79
Factory Office Expense.....(29)	265	00	"      "      C.....(12)		104	30
Miscellaneous Expense.....(29)	14	10			467	99
Miscellaneous Supplies.....(29)	20	00			467	99
	467	99			467	99

## FACTORY OVERHEAD, DEPT. A.

10.

Indirect Labor.....(2)	\$246	50	Work in Process, 1,802 Hours, at 67 cents.....(14)		\$1,207	34
Building Expense.....(3)	101	72				
Power.....(4)	252	30				
Insurance.....(5)	12	00				
Taxes.....(6)	15	00				
Depreciation.....(7)	75	00				
Repairs.....(8)	159	00				
General Factory Expense.....(9)	155	90				
Miscellaneous Supplies.....(29)	30	00				
"      Expense.....(29)	75	60				
Reserve for Overhead.....(13)	84	32				
	1,207	34			1,207	34

## FACTORY OVERHEAD, DEPT. B.

11.

Indirect Labor.....(2)	\$251	20	Work in Process, 2,523 Hours, at 52 cents.....(14)		\$1,311	96
Building Expense.....(3)	127	15	Reserve for Overhead.....(13)		119	78
Power.....(4)	336	40				
Insurance.....(5)	16	00				
Taxes.....(6)	20	00				
Depreciation.....(7)	100	00				
Repairs.....(8)	247	80				
General Factory Expense.....(9)	207	79				
Miscellaneous Supplies.....(29)	40	00				
"      Expense.....(29)	85	40				
	1,431	74			1,431	74

## FACTORY OVERHEAD, DEPT. C.

12.

Indirect Labor.....(2)	\$185	70	Work in Process, 4,418 Hours, at 15 cents.....(14)		\$662	70
Building Expense.....(3)	101	72	Reserve for Overhead.....(15)		153	65
Power.....(4)	168	20				
Insurance.....(5)	7	00				
Taxes.....(6)	8	75				
Depreciation.....(7)	43	75				
Repairs.....(8)	115	43				
General Factory Expense.....(9)	104	30				
Miscellaneous Supplies.....(29)	20	00				
" Expense.....(29)	61	50				
	816	35			816	35

## RESERVE FOR OVERHEAD.

13.

Factory Overhead, Dept. B... (11)	\$119	78	Factory Overhead, Dept. A... (10)	\$84	32
" " " C... (12)	133	65	Trading.....(20)	189	11
	273	43		273	43

## WORK IN PROCESS.

14.

Balance.....	\$2,000	00	Finished goods.....(15)	\$12,086	13
Material.....(1)	6,484	32	Balance.....	4,024	86
Labor.....(2)	4,444	67			
Factory Overhead, Dept. A... (10)	1,207	34			
" " " B... (11)	1,311	96			
" " " C... (12)	662	70			
	16,110	99		16,110	99
Balance.....	4,024	86			

## FINISHED GOODS.

15.

Balance.....	\$3,754	00	Trading (cost of sales).....(20)	\$8,801	53
Work in process.....(14)	12,086	13	Balance.....	7,635	72
Cost of returns.....(20)	597	12			
	16,437	25		16,437	25
Balance.....	7,635	72			

## SALES.

16.

Sales returns.....(17)	\$865	20	Accounts receivable.....(28)	\$13,485	60
Sales allowances.....(18)	50	00			
Out freight.....(19)	120	00			
Trading.....(20)	12,450	40			
	13,485	60		13,485	60

## SALES RETURNS.

17.

Accounts receivable.....(28)	\$865	20	Sales.....(16)	\$865	90
------------------------------	-------	----	----------------	-------	----

## SALES ALLOWANCES.

18.

Accounts receivable.....(28)	\$50	00	Sales.....(16)	\$50	00
------------------------------	------	----	----------------	------	----

## OUTBOUND FREIGHT.

19.

Accounts Payable.....(29)	\$120	00	Sales.....(16)	\$120	00
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## COST SYSTEM FOR MANUFACTURERS.

25

## TRADING.

20.

<i>Cost of Sales</i> .....(15)	\$8,801	53	<i>Cost of Returns</i> .....(15)	\$597	12
<i>Reserve for Overhead</i> .....(13)	189	11	<i>Sales</i> .....(16)	12,450	40
<i>Profit and loss</i> .....	(27)	4,056	88		
	13,047	52		13,047	52

## SHIPPING.

21.

#### SELLING EXPENSE

22

Salaries.....	(29)	\$800	00	<i>Profit and Loss</i> .....	(27)	\$1,120	53
Commissions.....	(29)	200	00				
Advertising.....	(29)	120	53				
		1,120	53				
=====							
						1,120	53

#### **GENERAL EXPENSE.**

23.

<i>Building Expense.....</i>	(3)	\$50	86	<i>Profit and Loss.....</i>	(27)	\$1,180	67
<i>Insurance.....</i>	(5)	14	00				
<i>Taxes.....</i>	(6)	16	75				
<i>Depreciation.....</i>	(7)	8	33				
<i>Officers' Salaries.....</i>	(29)	400	00				
<i>Office Salaries.....</i>	(29)	300	00				
<i>Delivery Expense.....</i>	(29)	186	43				
<i>Miscellaneous Expense.....</i>	(29)	204	30				
		<b>1,180</b>	<b>67</b>			<b>1,180</b>	<b>67</b>

## **DISCOUNT ON PURCHASES.**

24.

<i>Profit and Loss</i> .....(27)	\$165	40	Accounts Payable .....	(29)	\$165	40
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#### DISCOUNT ON SALES.

25.

Accounts Receivable.....(28)      \$95 00      *Profit and Loss*.....(27)      \$95 00

**RESERVE FOR BAD DEBTS.**

26.

Accounts Receivable.....(28)	\$64 00	Balance.....	\$125 00
Balance.....	131 00	Profit and Loss.....(27)	70 00
	195 00		195 00
		Balance.....	131 00

## PROFIT AND LOSS.

27.

Shipping.....	(21)	\$237	19	Trading.....	(20)		\$4,056	88
Selling.....	(22)	1,120	53	Discount on Purchases.....	(24)		165	40
General Expense.....	(23)	1,180	67					
Discount on Sales.....	(25)	95	00					
Reserve for Bad Debts.....	(26)	70	00					
<i>Net Profit to Surplus</i> .....	(36)	1,518	89					
		4,222	28				4,222	28

## ACCOUNTS RECEIVABLE.

28.

Balance.....		\$6,000	00	Cash.....	(30)	\$9,875	00
Sales.....	(16)	13,485	60	Returns.....	(17)	865	20
				Sales Allowances.....	(18)	50	00
				Discount on Sales.....	(25)	95	00
				Bad Debts.....	(26)	64	00
				Balance.....		8,536	40
						19,485	60
Balance.....		- 8,536	40				

## ACCOUNTS PAYABLE.

29.

Cash.....	(30)	\$15,350	50	Balance.....		\$6,250	00
Discount on Purchases.....	(24)	165	40			19,499	71
Balance.....		10,233	81				
		25,749	71			25,749	71
				Balance.....		10,233	81

## CASH.

30.

Balance.....		\$17,061	00	Accounts Payable.....	(29)	\$15,350	50
Accounts Receivable.....	(28)	9,875	00	Balance.....		11,585	50
		26,936	00				
Balance.....		11,585	50			26,936	00

## LAND.

31.

Balance.....		\$4,000	00				

## BUILDINGS.

32.

Balance.....		\$12,000	00				

## MACHINERY AND EQUIPMENT.

33.

Balance.....		\$50,000	00				

## COST SYSTEM FOR MANUFACTURERS.

27

## CAPITAL STOCK.

34.

		Balance.....	\$100,000	00
--	--	--------------	-----------	----

## UNISSUED STOCK.

35.

Balance.....	\$15,000	00		
--------------	----------	----	--	--

## SURPLUS.

36.

Balance.....	\$6,518	89	Balance.....	\$5,000	00
	6,518	89	Profit and loss.....	(27)	
					6,518 89

  

			Balance.....	6,518	89
--	--	--	--------------	-------	----

## TRIAL BALANCE (BEFORE CLOSING) JANUARY 31, 1916.

1 Materials.....			\$4,600	00		
2 Labor.....					\$686	79
5 Insurance.....			756	00		
6 Taxes.....			1,000	75		
7 Depreciation Reserve.....					1,568	74
10 Factory Overhead Dept. A.....					84	32
11 " " " B.....			119	78		
12 " " " C.....			153	65		
14 Work in Process.....			4,024	86		
15 Finished Goods.....			7,635	72		
16 Sales.....					13,485	60
17 Sales Returns.....			865	20		
18 Sales Allowances.....			50	00		
19 Outbound Freight.....			120	00		
20 Trading.....			8,204	41		
21 Shipping.....			237	19		
22 Selling Expense.....			1,120	53		
23 General Expense.....			1,180	67		
24 Discount on Purchases.....					165	40
25 Discount on Sales.....			95	00		
26 Reserve for Bad Debts.....					61	00
28 Accounts Receivable.....			6,536	46		
29 Accounts Payable.....					10,233	81
30 Cash.....			11,585	50		
31 Land.....			4,000	00		
32 Buildings.....			12,000	00		
33 Machinery and Equipment.....			50,000	00		
34 Capital Stock.....			15,000	00		
35 Unissued Stock.....					5,000	00
36 Surplus.....			131,285	66		

## PROFIT AND LOSS STATEMENT FOR MONTH ENDING JANUARY 31, 1916.

Gross Sales.....	(16) .....	\$13,485.60
Sales Returns.....	(17) .....	865.20
Sales Allowances.....	(18) .....	50.00
Outbound Freight.....	(19) .....	120.00
	_____	1,035.20
Net Sales.....		12,450.40
Cost of Sales.....	(20) .....	8,204.41
Reserve for Overhead.....	(13) .....	189.11
	_____	8,393.52
Gross Profit.....		4,056.88
Shipping.....	(21) .....	237.19
Selling Expense.....	(22) .....	1,120.53
General Expense.....	(23) .....	1,180.67
Discount on Sales.....	(25) .....	95.00
Bad Debts.....	(26) .....	70.00
	_____	2,703.39
Net Earnings.....		1,353.49
Discount on Purchases.....	(24) .....	165.40
Net Profit.....		1,518.89

## STATEMENT OF FACTORY OPERATIONS, FOR THE MONTH ENDED JANUARY 31, 1916.

## SUMMARY OF FACTORY OPERATIONS.

*Material:*

Inventory at first of Month.....	\$3,000.00
Purchases.....	7,800.00
Freight and Express In.....	284.32
	_____
Total.....	11,084.32
Less Inventory at End of Month.....	4,600.00
	_____
Direct Material Used.....	\$6,484.32

*Direct Labor.* ..... 4,444.67

*Factory Overhead, per detail below:*

Department A.....	1,207.34
"    B.....	1,311.96
"    C.....	662.70
	_____

Total Factory Overhead..... 3,182.00

Total Material, Labor and Overhead..... 14,110.99

*Add Inventory, First of Month:*

Work in Process.....	2,000.00
Finished Goods.....	3,754.00
	_____
	5,754.00

19,864.99

*Less Inventory at End of Month:*

Work in Process.....	4,024.86
Finished Goods.....	7,635.72
	_____

11,660.58

*Cost of Sales, per Profit and Loss Statement..... 8,204.41*

## SUMMARY OF FACTORY OVERHEAD.

Nature of Expense.	Total.	Department A.	Department B.	Department C.
Building Expense.....	\$330 59	\$101 72	\$127 15	\$101 72
Power.....	756 90	252 30	336 40	168 20
Depreciation.....	218 75	75 00	100 00	43 75
Insurance.....	35 00	12 00	16 00	7 00
Taxes.....	43 75	15 00	20 00	8 75
Shop Repairs.....	522 23	159 00	247 80	115 43
General Factory Expense.....	467 99	155 90	207 79	104 30
Miscellaneous Supplies.....	90 00	30 00	40 00	20 00
Indirect Labor.....	683 40	246 50	251 20	185 70
Miscellaneous Expense.....	222 50	75 60	85 40	61 50
Total.....	3,371 11	1,123 02	1,431 74	816 35
Adjustment in Department Overhead.....	189 11	84 32	119 78	153 65
Total Factory Overhead, as above.....	3,182 00	1,207 34	1,311 96	662 70

## BALANCE SHEET, JANUARY 31, 1916.

## Current Assets:

Cash.....	(30)	.....	\$11,585.50
Accounts Receivable.....	(28)	\$8,536.40	
Less Reserve for Bad Debts.....	(26)	131.00	8,405.40
Raw Materials.....	(1)	.....	4,600.00
Work in Process.....	(14)	.....	4,024.86
Finished Goods.....	(15)	.....	7,635.72

Total Current Assets..... \$36,251.48

## Deferred Assets:

Prepaid Insurance.....	(5)	.....	756.00
Prepaid Taxes.....	(6)	.....	1,000.75

Total Deferred Assets..... 1,756.75

## Capital Assets:

Land.....	(31)	.....	4,000.00
Buildings.....	(32)	12,000.00	
Machinery and Equipment.....	(33)	50,000.00	
		62,000.00	
Less Depreciation Reserve.....	(7)	1,568.74	60,431.26

Total Capital Assets..... 64,431.26

Total Assets..... 102,439.49

## Current Liabilities:

Accounts Payable.....	(29)	.....	10,233.81
Accrued Wages.....	(2)	.....	686.79

Total Current Liabilities..... 10,920.60

## Capital Liabilities:

Capital Stock.....	(34)	100,000.00	
Less Unissued Stock.....	(35)	15,000.00	85,000.00
Surplus.....	(36)	.....	5,000.00

Total Capital Liabilities..... 90,000.00

Net Profit for Month..... 1,518.89

102,439.49

**USES AND ADVANTAGES OF A COST SYSTEM.**

The prime object of a cost system is to determine costs, to analyze and compare them, and to use them as a basis for making prices. But the uses and advantages go further. A manufacturer from reliable records is able to make clearer and more intelligent statements to his bank and thereby obtain a larger line of credit than he could without them.

**BETTER DIRECTION OF SALES FORCE.**

In most every line of manufacture there are some classes of work done on which the manufacturer loses money. This may be due to the high cost in his own plant, or it may be due to the fact that some competitor is better equipped to make that particular article. A cost system will bring out these facts and will show the manufacturer which lines he should push. Salesmen, like everyone else, are prone to follow the line of least resistance. In salesmanship, the line of least resistance is selling the goods which require the least effort, and in nearly every instance the goods which require the least effort to sell are the least profitable lines. If the selling force know that a line of goods produces little or no profit and are told to use every effort to push another line, the result will be apparent in the profit and loss account.

Still other manufacturers have customers on their books to whom they have been selling for years and have been giving some reduction in price or some concession in the way of extra work. A number of these accounts are decidedly unprofitable, and a cost system will bring these to light and put the manufacturer either in a position to raise his prices to a profitable basis or let some one else have the unprofitable business.

**ELIMINATION OF WASTE.**

In every manufacturing business there are bound to occur leaks, either of material, labor, or expense. If statistics are kept showing the amount of material necessary to do certain classes of work, the amount of labor, and the amount of overhead expense, an increase in any of these items will be revealed by a comparison and the executive will be in a position to take the matter up for investigation. It is hardly necessary to say that after a few of these matters have been taken up with the factory the factory people will use a little more care, not only in the use of the material but in the time they spend on the work. A cost system with forms properly designed for giving statistical information is of the greatest aid to factory efficiency.

**COST SYSTEM AN INVESTMENT, NOT AN EXPENSE.**

A system will not run itself; neither will it in itself reduce costs nor increase efficiency. This is strictly up to the manufacturer himself. A system will give him the information, and if this information is properly used, he will unquestionably find that his system is not an item of expense, but a very valuable asset.

If a manufacturer purchases a new machine before his old one is worn out, he does so because he expects the amount expended to increase his profits either from economy in operation or from an increase in production. He looks on this as an investment and not an expense. Office methods have been improved to quite as large an extent as machinery, and an investment in improved methods will produce a return just as will an investment in improved machinery.

One of the strongest arguments in favor of installing a practical cost system is the fact that every manufacturer who has installed one and who has operated it for at least a year is firmly convinced that it is a paying proposition.

The Federal Trade Commission is urging manufacturers to give the subject of accurate costs the attention it deserves. It has found that unreliable costs of production and distribution cause a great deal of unfair competition and a heavy business death rate.

While the claim is not made that a cost system will save a man from failure, the claim is made that a man who knows where he stands day by day is very much less likely to make a failure of his business than one who is directing his business by guesswork.











